



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,247	01/23/2004	Rene Gallezot	FR920020090US1	8047

25299 7590 07/20/2006

IBM CORPORATION
PO BOX 12195
DEPT YXSA, BLDG 002
RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

BAKER, STEPHEN M

ART UNIT PAPER NUMBER

2133

DATE MAILED: 07/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/764,247	Applicant(s) GALLEZOT ET AL.	
	Examiner Stephen M. Baker	Art Unit 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because Fig. 4 is considered to be confusing by not showing the overlap between syndrome subsets in the standard manner of Venn diagrams, *i.e.* with fully-enclosed overlap areas. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

In paragraph 0009, "method of shortening" (two occurrences) is considered misdescriptive because the steps in paragraphs 0010-0013 merely obtain syndromes corresponding to all possible descrambler-tripled single errors, in addition to "remembering" only those syndromes which indicate that a descrambler-tripled error extends to the next codeword. The steps in paragraphs 0010-0013 appear instead to be incomplete steps for designing a decoder state machine (*i.e.* through the obtaining of all possible correctable-error syndromes, which also requires an unclaimed "remembering" of these syndromes so that they may be compared for uniqueness where needed and possibly programmed into a lookup table decoder) and a step that is apparently also usable during decoding itself (*i.e.* "remembering" only syndromes that affect the next codeword, as the other syndromes are already pre-stored in the lookup table). The disclosure appears to describe a process of designing a code by first selecting a code generator polynomial degree (11) and a scrambling generator polynomial ($G(x) = x^{58} + x^{19} + x^1$), then selecting the code generator polynomial ($G(x) = (1+x)(x^{10} + x^9 + x^7 + x^6 + x^4 + x^1 + 1)$) for a second term that produces the lowest power root (α^{166}) as the sum of roots spaced by the scrambling polynomial ($\alpha^{58} + \alpha^{19} + \alpha^0$), then determining the maximum codeword size decodable (915 bits) and thus the minimum degree of code shortening required for the selected code generator polynomial and scrambler polynomial to generate a suitable code. Accordingly, "method of shortening a" at the beginning of the paragraph apparently should be "method of generating a

Art Unit: 2133

decoder for a shortened” or “method of decoding for a shortened” or the like, and “method of shortening” at the end of the paragraph apparently should be “method of generating a decoder” or “method of shortening” or the like.

In paragraph 0021, “code is determined as described above” apparently should be “decoder is generated as described above” or “code is decoded as described above” or the like.

In paragraph 0060, “a weird 11-bit field” apparently should be “an odd-sized 11-bit field” or the like.

In paragraphs 0067 and 0068, referring to the scrambler polynomial as “G(x)” is confusing as the code generator polynomial is also referred to as “G(x).”

In paragraph 0071, “When this happens no single-bit error or double-bit error ... may have possibly occurred in the previous packet” apparently should be “When such syndromes are detected no single-bit error or double-bit error ... is assumed to have occurred in the previous packet” or the like.

In paragraph 0086, “sake a readability” apparently should be “sake of readability.”

In paragraph 0090, “degree of the polynomial” apparently should be “degree of the scrambler polynomial.”

Appropriate correction is required.

Claim Objections

3. Claims 1 and 12 are objected to because of the following informalities:

In claim 1, line 10, the colon apparently should be a semi-colon.

In claim 12, "being" apparently should be "is."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1: in line 1, "method of shortening a" apparently should be "method of generating a decoder for a shortened" or the like.

In claim 4: the scope of "Hamming-like," beyond having the already-specified SEC/DED capacity, is not apparent.

In claim 7: "wherein said ... code is determined according to syndrome" is elliptical and vague enough to read on typical syndrome decoding, i.e. "the code(word) sent is determined according to the syndrome" and apparently should be "wherein said ... code is a code selected according to the syndromes generated thereby" or the like.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2133

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,771,126 to Apple, Jr. (hereafter "Apple").

Apple discloses an FEC encoder and decoder for correcting scrambler-multiplied errors. Apple's FEC encoding (113, 114) is "computing forward error correction bits of said selected set of data ..." and "merging said selected set of data and said forward error correction bits ..." and is performed before scrambling (116). Apple's code is selected for its ability to generate suitable syndromes (Theorem 2, column 5).

8. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,923,680 to Brueckheimer *et al* (hereafter "Brueckheimer").

Brueckheimer discloses an FEC encoder and decoder for correcting scrambler-multiplied errors. Brueckheimer's FEC encoding (not shown) is "computing forward error correction bits of said selected set of data ..." and "merging said selected set of data and said forward error correction bits ..." and is performed before scrambling. Brueckheimer's code is selected for its ability to generate suitable syndromes.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Apple.

Apple's receiver descrambles received codewords before decoding the codewords. Apple's decoder generates a syndrome vector (S_1, S_3), and an error-free packet has an all-zero syndrome vector (column 10, line 45+).

Apple does not mention whether the received data is carried in "packets." Official notice is given that the advantages of placing data in packets for transmission, such as for supporting data routing in large communication networks, were well-known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply Apple's encoder and decoder to data carried in packets. Such an application would have been obvious because the advantages of placing data in packets for transmission were already well-known.

11. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brueckheimer.

Regarding claim 8, Brueckheimer's receiver descrambles received codewords before decoding the codewords. Brueckheimer's decoder generates a syndrome vector (σ, S_0-S_8), and an error-free packet has an all-zero syndrome vector.

Brueckheimer does not mention whether the received data is carried in "packets." Official notice is given that the advantages of placing data in packets for transmission, such as for supporting data routing in large communication networks, were well-known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply Brueckheimer's encoder and decoder to data carried in packets. Such an application would have been

Art Unit: 2133

obvious because the advantages of placing data in packets for transmission were already well-known.

Regarding claim 9, Brueckheimer discloses flagging a non-zero syndrome condition (column 7, lines 7-16). Errors equal in number (2) to the number of scrambler polynomial terms are corrected by Brueckheimer's double-bit error correction (134b).

Allowable Subject Matter

12. Claims 1-6 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

13. Claims 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

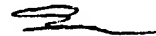
14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

Art Unit: 2133

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Stephen M. Baker
Primary Examiner
Art Unit 2133

smb